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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,925	08/20/2003	Hiroyuki Yamada	056205.48558C1	4766

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EXAMINER
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MILLER, CARL STUART

ART UNIT	PAPER NUMBER
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3747

MAIL DATE	DELIVERY MODE
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10/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/643,925

Applicant(s)

YAMADA ET AL.

Examiner

Carl S. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-14, 26, 28-31 and 35 is/are pending in the application.
- 4a) Of the above claim(s) 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14, 26, 28-30 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

Claim 31 remains withdrawn from consideration as drawn to non-elected species of the invention. The applicant should note that Claim 31 in particular does not appear to read on the elected species of Figure 11.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-13, 26, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer in view of Wilber.

Kraemer, as noted in earlier office actions, teaches a fuel injection pump with all of the applicant's claimed features except the second spring biasing the holder in the outward position and thereby causing the inlet valve to be held open. While this feature is not taught by Kraemer, the mechanism is held open by some manner since the activation of the solenoid appears to retract the holder, thereby allowing the check valve to close.

Wilber (UK('941)) teaches a check valve that includes a ball valve biased by a first spring and a larger spring that biases a holder in a direction to hold the check valve open. The solenoid is used to overcome the bias of the second spring and allow the check valve to close.

It would have been obvious to modify Kraemer by constructing the check valve as taught by Wilber because the latter valve was also used as an injection timing device by allowing fluid to be released from a timing chamber as opposed to the pumping chamber

Claims 14 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer and Wilber as applied to claim 11 above, and further in view of Yasuhara.

Yasuhara teaches the use of an injection pump inlet solenoid valve that does not set the beginning of injection, but instead closes at a fixed time. This is possible because the timing is set by rotation of the pump cam mechanism. Furthermore, the inlet solenoid of the device is mounted on the side of the pumping plunger.

It would have been obvious to modify Kraemer by using the inlet solenoid to set only the end of injection since it was known in the art to use other means to set the beginning of injection even in a system having a solenoid-controlled inlet. Yasuhara's location for the solenoid shaft was well known in the art and the examiner cannot see how changing the orientation of the Kraemer inlet valve would have had any effect upon the operation of the device. Furthermore, the applicant does not really identify (in his remarks) any improvement resulting from his location.

Applicant's arguments filed 8/22/07 have been fully considered but they are not persuasive. In particular, the examiner has again reviewed applicant's comments regarding the Kraemer reference and does not find them convincing. While the examiner is willing to admit that the reference includes some inconsistencies, it is not critical whether or not the pin is spring-loaded to push the pin forward or backward. One of ordinary skill in the art would realize that either way the solenoid can be used to open and close the valve. While the examiner still believes that the tappet of the Kraemer device is the equivalent of applicant's large spring in that it acts to hold the inlet valve open by forcing the holder element against the smaller spring, even if the device works in the other direction the secondary reference to Wilbur clearly teaches the

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use of a larger spring to hold the ball valve open and an armature used to retract the rod and allow the ball to close.

With regard to Claim 35, the Yasuhara reference has now been applied against the claim and clearly teaches an inlet solenoid and piston oriented as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carl S. Miller whose telephone number is 571-272-4849. The examiner can normally be reached on MTWTHF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Cronin, can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Carl S. Miller  
Primary Examiner